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At several design stages the plans will be submitted to various Department units for review. Section 14-2.0 identifies the construction plan sheets that should be completed at the various design stages.

Prior to any of these submissions, the project manager is responsible for ensuring that all appropriate information has been incorporated onto the plans or is included with the plans; the plans are consistent; all comments from previous submittals have been addressed; all calculations have been checked; and the overall content meets the Department's criteria.

14-1.02 Project Development

Chapter Two illustrates the steps the designer should follow when preparing a set of construction plans. Using this process will ensure that all appropriate information will be addressed in the construction documents. The following sections briefly discuss the project development relative to the plan sheets.

14-1.02(01) Project Initiation

The Production Management Division's Office of Environmental Services is responsible for preparing the Engineer's Report. This Report provides the scoping information the designer requires to initiate the project design. Chapter Five discusses the typical contents of an Engineer's Report.

Prior to beginning design on an existing facility, the designer should review the as-built plans and/or the final design plans. Final design plans are on file, on microfilm, in the Central Office. The actual as-built plans and/or microfilm are located in the appropriate district office. The district office is responsible for correcting the final design plans to reflect the as-built conditions. For a traffic signal project, the final design plans will be corrected to the as-built condition and stored within the Design Division's traffic signal design unit.

Although the as-built plans are an important resource, the designer will typically conduct a field review and/or have a survey conducted for each road or bridge project. Section 14-3.0 discusses how to incorporate the survey data into the construction plans. For most traffic signing, signalization, or lighting work, a survey will generally not be performed. However, a field review will still be required.

If the design requires a deviation from an INDOT *Standard Drawing*, it may be handled by either of the methods as follows:

1. Inclusion of a detail in the plans.

2. Reference made to an INDOT *Standard Drawing*, which is not applicable to the situation, but is warranted anyway. For example, Standard Drawing 610-DRIV-05 is applicable if the mainline shoulder is paved and 2.4 m or greater in width. In a restricted situation, it may be appropriate to have the drive constructed in accordance with 610-DRIV-04 instead. In this situation, it will be sufficient to add a note in the approach table "remarks" column as follows: Construct in accordance with Standard Drawing 610-DRIV-04.

The designer of a "mother" project should coordinate the combining of multiple projects into one contract. Attention should be given to the pay items (i.e., if one has QC/QA pavement, the other must also use QC/QA pavement even if not otherwise warranted). If there is no "mother" project (i.e., two independent bridge replacement projects), the INDOT designer or project manager should coordinate the combining of the projects into one contract.

14-1.02(02) Field Check

The project manager, or consultant, if one is involved, is responsible for preparing and distributing plans for each field check. This will consist of the following:

1. Scheduling and INDOT Review. For a Department-designed project, the project manager will schedule the field check. Prior to the field review of a consultant-designed project, the consultant is required to forward one set of plans to the Central Office. If the plans are satisfactory for a field check, INDOT will notify the consultant to schedule the field check. If the plans are not satisfactory, marked-up plans will be returned to the consultant for re-submittal.

2. Meeting Date. For a Department-designed project, the INDOT project manager is responsible for arranging a mutually agreeable field check date with the district construction area engineer. For a consultant-designed project, the consultant has this responsibility with the INDOT project manager and the district construction area engineer. In general, the field check should be scheduled at least three weeks in advance.

FIELD CHECK NOTIFICATION

Date _____

Preliminary Final Field Check Notification

Work Type: _____
Route _____
Des No. _____
PE Project No. _____
R/W Project No. _____
CN Project No. _____
Bridge File: _____
Over _____
Location: _____ _____ of _____, in _____ County

A Preliminary Final Field Check for this project has been scheduled for _____. The meeting will be held at _____ at the project site. Anyone wishing to provide input into the design of this project should plan to attend.

Utilities with facilities within the limits of this project should review the plans to determine if their existing facilities are accurately shown. Utilities that believe that their facilities will need to be adjusted should attend this meeting. This meeting could provide opportunities for design changes that could eliminate some utility conflicts. Utilities will be contacted by the INDOT Production Management Division's Utilities Team leader at a later date concerning the project schedule and relocation coordination. The Utilities Team leader may be contacted at (317) 232-5308.

Name _____
Project Manager

FIELD CHECK NOTIFICATION LETTER
INDOT-Designed Project

Figure 14-1B(h)

The distribution of this notification is as follows:

INDOT CENTRAL OFFICE DISTRIBUTION					
Recipient	PFC	FFC	Letter	Plans	X-Sec.
Environmental Policy Team Leader, Production Management Div. (1)	X	X	X	X	
Geotechnical Engineering Mgr., Production Management Div.	X	X	X	X 2 sets	X 2 sets
Project Manager, Production Management Div. ©	X	X	X	(2)	(2)
Railroads Team Leader, Production Management Div. ©	X		X	X	
Real Estate Acquisition Team Leader, Production Mgmt. Div.	X	X	X	(3)	
Real Estate Administrative Services Team Ldr., Production Mgmt. Div.	X	X	X		
Real Estate Property Mgmt. Team Leader, Production Mgmt. Div.	X		X	X (4)	
Utilities Team Leader, Production Management Div. ©	X	X	X	X	X
Field Engineer, Construction Management Div.	X		X		
Research and Documents Library Team Leader, Planning Div.	X	X	X		
INDOT DISTRICT DISTRIBUTION					
Construction Engineer	X	X	X	2 sets	
Design Team Leader (D) (5)	X	X	X	X	X
Environmental Scoping Mgr. (D)	X	X	X	X	
Operations Manager	X	X	X		
Planning and Programming Director	X	X	X		
Production Director	X	X	X		
Program Coordinator	X	X	X		
Railroads Team Leader (D)	X		X	X	
Real Estate and R/W Pgm. Dir. (D)	X	X	X	X	
System Assessment Mgr. (D)	X	X	X		
Testing Office Mgr. (D)	X	X	X	X	X
Traffic Engineer	X	X	X	(6)	
Utilities Team Leader (D)	X	X	X	X	X
NON-INDOT DISTRIBUTION					
City officials (7)	X	X	X		
County Road Spvsr. Or Hwy. Engr.	X	X	X	(8)	
FHWA Area Engineer	X	X	X	(9)	
U.S. Fish and Wildlife Service	X	X	X		
Utility companies	X	X	X	X	X

Notes:

© Central-Office-developed project only
(D) District-developed project only

(1) only for project other than Interstate-route bridge rehabilitation
(2) only if plans do not change from initial submittal
(3) only if additional right of way is required
(4) 2 sets plans if additional right of way is required
(5) only if district-developed, or if signs, pavement markings, signals, or lighting are involved
(6) only if traffic project
(7) only if metropolitan area is affected
(8) only if legal drains, etc., are involved
(9) only if project requires FHWA oversight

[CONSULTANT'S LETTERHEAD]

Date _____

Preliminary Final Field Check Notification

Work Type: _____
Route _____
Des No. _____
PE Project No. _____
R/W Project No. _____
CN Project No. _____
Bridge File: _____
Over _____
Location: _____ _____ of _____, in _____ County

Our firm is under contract with the Indiana Department of Transportation for the design of the referenced project. A Preliminary Final Field Check for this project has been scheduled for _____. The meeting will be held at _____ at the project site. Anyone wishing to provide input into the design of this project should plan to attend.

Utilities with facilities within the limits of this project should review the plans to determine if their existing facilities are accurately shown. Utilities that believe that their facilities will need to be adjusted should attend this meeting. This meeting could provide opportunities for design changes that could eliminate some utility conflicts. Utilities will be contacted by the INDOT Production Management Division's Utilities Team leader at a later date concerning the project schedule and relocation coordination. The Utilities Team leader may be contacted at (317) 232-5308.

Name _____
Firm Name _____

FIELD CHECK NOTIFICATION LETTER
Consultant-Designed Project

Figure 14-1B(c)

The distribution of this notification is as follows:

INDOT CENTRAL OFFICE DISTRIBUTION					
Recipient	PFC	FFC	Letter	Plans	X-Sec.
Project Manager, Production Mgmt. Div.	X	X	X	(1)	(1)
Environmental Policy Team Leader, Production Mgmt. Div. (2)	X	X	X	X	
Geotech. Svcs. Des. Team Leader, Production Mgmt. Div.	X	X	X	X 2 sets	X 2 sets
Railroads Team Ldr., Produc. Mgmt. Div.	X		X	X	
Utilities Team Ldr., Produc. Mgmt. Div.	X	X	X	X	X
Research and Documents Library Team Ldr., Planning Div.	X	X	X		
Field Engineer, Construction Mgmt. Div.	X		X		
Acquisition Team Leader, Real Estate Ofc., Production Mgmt. Div.	X	X	X	(3)	
Administrative Svcs. Team Leader, Real Estate Ofc., Production Mgmt. Div.	X	X	X		
Property Mgmt. Team Leader, Real Estate Ofc., Production Mgmt. Div.	X		X	X (4)	
INDOT DISTRICT DISTRIBUTION					
Program Coordinator	X	X	X		
Director, Attn.: Design Engineer (5)	X	X	X		
Construction Engineer	X	X	X	X 2 sets	
Operations Manager	X	X	X		
Traffic Operations Engineer	X	X	X	(6)	
NON-INDOT DISTRIBUTION					
FHWA Area Engineer	X	X	X	(7)	
U.S. Fish and Wildlife Service	X	X	X		
County Road Spvsr. or Hwy. Engr.	X	X	X	(8)	
City officials (9)	X	X	X		
Utility companies	X	X	X	X	X

Notes:
(1) only if plans do not change from initial submittal
(2) only for project other than Interstate-route bridge rehabilitation
(3) only if additional right of way is required
(4) 2 sets plans if additional right of way is required
(5) only if district-developed, or if signs, pavement markings, signals, or lighting are involved
(6) only if traffic project
(7) only if project requires FHWA oversight
(8) only if legal drains, etc., are involved
(9) only if metropolitan area is affected

3. Plan Distribution. The INDOT project manager, or consultant, if one is used, is responsible for preparing field check notification letters and plans so that they are received by all parties on the distribution list at least two weeks prior to the field check. Plans distributed within the Central Office may be delivered to the Contract Administration Division's Document Control Team leader. All other plans and letters should be sent directly to the necessary individuals. See Figure 14-1B(h), Field Check Notification Letter, INDOT-Designed Project, or Figure 14-1B(c), that for a consultant-designed project. Editable versions of these forms may also be found on the Department's website at www.in.gov/dot/div/contracts/design/dmforms/.

4. Field Check Report. After the field check has been completed, the INDOT project manager, or consultant, if one is used, will be responsible for preparing the report of meeting and listing the comments from all individuals involved in the field check. Copies of this report will be distributed to all those involved in the field check and to those individuals listed in the distribution in Figure 14-1B(h) or Figure 14-1B(c).

14-1.02(03) Final Tracings Submittal

The construction project number should be shown in the box in the upper left hand corner of the Title Sheet and the lower right hand corner of all other plan sheets. For right-of-way plans, the right-of-way project number should be shown.

The project manager will submit the final tracings to the project coordinator. The project coordinator will submit the plans to the Research and Documents Library Team. This submittal will include the following:

1. one set of final tracings (mylar) and cross sections (reproducible vellum or mylar);

2. set of marked-up final check prints;

3. two sets of prints;

4. a 3.5-in. diskette or CD-ROM containing the following:

    a. final cost estimate (on Estimator), with a separate estimate prepared for each Des number, using the most recent bid history and pay item list files;
    b. one Recurring Special Provisions Menu in Microsoft Excel, covering all Des numbers in the contract. The Menu may be found on the Department's website, at www.in.gov/dot/div/contracts/standards/rsp/index.html.

c. modified recurring special provisions and unique special provisions in Microsoft Word.

5. three hard copies of the final cost estimate and four hard copies of the special provisions;

6. two copies of the Memorandum to Contracts Services Section which contains information on the status of permits, right-of-way, etc. An editable version of this document may be found on the Department's website, at www.in.gov/dot/div/contracts/design/dmforms/.

7. four copies of permits or permit information. See Section 9-1.03 for additional information;

8. subsurface investigation, or geotechnical summary;

9. Scope/Environmental Compliance Certification/Permit Application Certification form. An editable version of this document may be found on the Department's website, at www.in.gov/dot/div/contracts/design/dmforms/.

10. one bound copy of the design computations and two copies of the quantity calculations;

11. project correspondence files;

12. original survey book(s) and electronic survey files on 3.5 in. diskette or CD-ROM;

13. Bridge Search Data form. An editable version of this document may be found on the Department's website, at www.in.gov/dot/div/contracts/design/dmforms/.

14. Quality Assurance form. An editable version of this document may be found on the Department's website, at www.in.gov/dot/div/contracts/design/dmforms/.

15. Figure 14-1B(1), Asbestos Certification Form (for new bridge construction, bridge replacement, or bridge rehabilitation project), original to the appropriate district bridge inspector; a copy to the Environmental Services Office's Environmental Policy Team leader; and a copy to be placed in the design calculations document. An editable version of the Asbestos Certification form may be found on the Department's website, atwww.in.gov/dot/div/contracts/design/dmforms/;

ASBESTOS CERTIFICATION

Route: _____
Des. No.: _____
Contract No.: _____
Project No.: _____
Structure No.: _____
Over: _____
County: _____

I hereby certify that no asbestos-containing material was specified as a building material in any construction document for this project.

_____ _____
Project Manager signature Date

_____
INDOT Production Management Division
Office Manager or Consulting Firm name

_____ : _____

cc: _____, _____ District Bridge Inspection Engineer
_____, INDOT Environmental Policy Team Leader
Project design calculations document

ASBESTOS CERTIFCATION FORM

Figure 14-1B(1)

16. Geotechnical Review of Final Check Prints form. An editable version of this document may be found on the Department's website, at www.in.gov/dot/div/contracts/design/dmforms/; and

17. Limited Review Certification. An editable version of this document may be found on the Department's website, at www.in.gov/dot/div/contracts/design/dmforms/.

The map of the official detour route, where applicable, as developed by the district, should be provided to the Contract Administration Division's Bid Review and Estimating Team for incorporation into the Contract Information book. Maps of unofficial detour routes should not be provided. Also, the output from the pipe material selection program should not be provided.

The Scope/Environmental Compliance Certification/Permit Application Certification form, design computations, quantity calculations, project correspondence files, and survey books are maintained in the Records Unit as a reference file for the project. Two sets of prints from the final plans, the disk, cost estimate, special provisions, copies of permits or permit information, Federal Fiscal Management Form (completed by the Records Unit), and the Memorandum to Contracts Services Section are submitted to the Bid Review and Estimating Team.

It is the responsibility of the designer handling a "mother" project to be certain that the tracings for all included projects are brought together and submitted to the Records Unit in time for processing.

The Records Unit enters the preliminary data on the project into BAMS at this time. The information is processed by the des number. If there is more than one des number, the data must be entered for each des number and the cost estimates segregated by the des number.

The Records Unit prepares the original tracings for letting. Contract numbers and project numbers are checked, reference points are checked, des numbers are checked, and a memorandum is prepared for the signer of the plans. The plans are signed and dated by the project designer and the Production Management Division director.

The designer should review the plans and Contract Information book received of the Bid Review and Estimating Team within one week after such receipt. The designer should complete the Contract Information Book Certification form and return it to the Contract Administration Division's Document Control Team leader. An editable version of this document may be found on the Department's website, at www.in.gov/dot/div/contracts/design/dmforms/.

14-2.0 PLAN SHEET SUBMISSIONS

The designer should submit a Level One Checklist, including computations, with each submission, for the mainline, each S-line, and each traffic maintenance phase. In addition, the designer should include computations for the required intersection sight distance at each public road, including local service roads and frontage roads within the project limits. The designer should also submit documentation of the intersection sight distance provided at each public road. This requirement also applies to the traffic maintenance phases. The designer should submit a completed Limited Review Certification form for projects at the final check prints and final tracings stages.

The computations for the Level One items and intersection sight distance are to be initialed and dated by the designer and reviewer before submission to INDOT.

If there are no changes to the plans which affect Level One criteria since the prior submission, it is acceptable to copy the previous Level One Checklist and add a statement that no changes have been made to the plans that affect Level One criteria. The statement should be initialed and dated for the current submission.

14-2.01 Road Design Plans (New Construction/Reconstruction Project)

14-2.01(01) Grade Review Submission/Hydraulic Review Submission

It is not necessary to submit a Level One checklist for an S-line that does not exceed the work necessary to build the appropriate public road approach, including the required taper distance to account for transitioning to the existing pavement width. This does not relieve the designer of making the project meet all Level One design elements in this area, e.g., maximum grade, vertical stopping sight distance, and intersection sight distance.

The proposed design information for this submittal should be plotted in MIcrostation. However, the plans need not be in final form. The designer is encouraged to add notes on the plans explaining special situations or items which are not readily apparent which may influence the proposed design. These notes are to be removed in later submissions. The following sheets and information must be reviewed for Quality Assurance and included with this submission:

1. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and note any apparent or possible design exceptions.

Also note any discrepancies from the Level Two design criteria listed in Section 40-8.02(02).

2. Title Sheet. At this project stage, information on the Title Sheet should include the following:

   a. project numbers;

   b. project Des numbers;

   c. county location map;

   d. project location map including north arrow and scale;

   e. description of the project work type and location;

   f. reference points at the beginning and end of the project (not required for local agency projects);

   g. gross and net project lengths, not including incidental construction or lengths along S-lines;

   h. design data including design speed, project design criteria, functional classification, terrain, traffic data, urbanness, etc.; and

   i. signature block(s); note that these blocks will not be filled in at this stage.

3. Index and General Notes Sheet. The Index and General Notes Sheet should provide a list of utility owners and addresses. The index blocks should be completed to indicate the sheet numbers for the plans at this stage. Note that the sheet numbers will change for future submittals.

4. Typical Cross Sections. Typical cross sections for this submittal should only show basic configuration and design features. This will typically include the following:

   a. lane and shoulder widths;
   b. profile grade, construction centerline, paper relocation line and survey line locations;

c. cross slopes;
d. curbs;
e. sidewalk locations and widths;
f. bicycle facilities;
g. side slopes;
h. shoulder corrugations if warranted; and
i. ditches.

5. Plan and Profile Sheets. At this project stage, the plan and profile will generally only include the preliminary design information. Plotting of the existing topography should be complete. Some of the details that should be addressed include the following:

a. horizontal alignment (e.g., horizontal curve data, PC, PI, PT, bearings);

b. vertical alignment and its relationship to grade controlling features;

c. all alignment controlling features (e.g., high-water levels, existing cross roads and bridges, regulated drains, drainage structures, railroads, underdrain criteria, traffic maintenance considerations, cemeteries, historical buildings, parks, ADA requirements, etc.); and

d. preliminary drainage details, e.g., bridges and mainline culverts.

6. Interchange. If the project includes at least one interchanges, the general layout of the interchange should be shown, including preliminary ramp gradients, horizontal alignment, vertical alignment, etc.

7. Cross Sections. Provide sample cross sections through critical areas.

8. Design Information. In addition to the plans, the designer should include copies of the preliminary hydraulic analysis for mainline culverts, if applicable, and results of any economic analysis that may have been completed for alternative grade lines.

9. Certification. Include an up-to-date copy of the Scope/Environmental Compliance Certification/Permit Application Certification form.

14-2.01(02) Interchange Geometrics Submission

For a project which includes at lest one interchange, a separate submittal of the proposed horizontal alignment for the interchange may be required prior to the Grade Review. The following elements must be reviewed for Quality Assurance and included with this submission:

1. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and note any apparent or possible design exceptions. Also note any discrepancies from the Level Two design criteria listed in Section 40-8.02(02).

2. Geometrics. The plan sheets for the interchange geometrics should be graphically completed including stationing, curve data, bearings, etc. The design speeds for ramps should be noted.

3. Ramp Grades. Investigate ramp grades in as much detail as required to determine their effect on the proposed horizontal alignment.

4. Traffic Elements. The traffic elements to be reviewed to determine their effect on the interchange alignment are as follows:

    a. traffic counts and turning movements;
    b. consideration of signing;
    c. consideration of signals at ramp terminals; and
    d. consideration of illumination (high mast or conventional).

5. Design Information. Include all applicable design information with this submission (e.g., economic analysis, drainage analysis).

14-2.01(03) Preliminary Field Check Plans

Plans should be approximately 40% complete at this stage. The following sheets and information must be reviewed for Quality Assurance and included with this submission.

1. Previous Reviews. The marked-up plans from the previous submittal should be include with this submission, i.e., Grade Review and/or Interchange Geometrics.

2. Conformance. The plans should be reviewed for conformance with the Level One controlling design criteria listed in Section 40-8.02(01). Any apparent or possible design exceptions should be noted. Also, any discrepancies from the Level Two design criteria listed in Section 40-8.02(02) should be noted. The required documentation for all Level One and Level Two design exceptions should be submitted.

3. Plat Sheet. A preliminary Plat No. 1 should be included for each project on a Department-maintained route requiring right of way. See Section 85-2.0.

4. Plan and Profile Sheets. Elevations and grades of ditches should be shown so that accurate right-of-way requirements can be determined. In addition to the criteria required for prior submittals, the plan and profile sheets should include the following:

   a. project limits;

   b. drainage features (e.g., pipe structures, ditch grades, preliminary inlet spacing for storm-sewer trunk line design, etc.) and proposed drainage notes;

   c. public road approach and drive locations;

   d. construction limits;

   e. proposed right-of-way;

   f. approximate roadside barrier locations;

   g. permanent erosion protection, including paved side ditches, riprap, sodding limits; and

   h. new sidewalks, bicycle lanes, etc., if not shown on the detail sheets.

5. Detail Sheets. The preliminary layouts or sketches for the detail sheets should be included as follows:

   a. major intersections, including turning movements, turn lanes and pavement markings;

   b. signals;

c. signs, including sign structures;

d. lighting;

e. retaining walls;

f. special drainage structures;

g. superelevation transition diagrams;

h. weigh stations and associated facilities; and

i. rest areas and associated facilities.

If shoulder corrugations are warranted, and the plans include details for non-standard public road approaches, driveways, etc., each detail should show the extent of corrugations installation required in conjunction with the construction illustrated by the detail. If applicable, the INDOT *Standard Drawings* should be used as a guide when determining the limits of corrugations installation related to the feature shown in the detail.

6. Traffic Maintenance Details. The proposed traffic maintenance scheme and phasing should be outlined.

7. Approach Table. The preliminary information to be included in the approach table is as follows:

a. location (station);
b. type of approach;
c. radii;
d. width of approach;
e. length of approach;
f. grade of approach;
g. surface materials; and
h. distance beyond R/W.

8. Structure Data Table. The preliminary information to be included in the structure data table is as follows:

   a. location;
   b. size;
   c. type;
   d. approximate elevations and grades where necessary for clarity; and
   e. type of end section.

9. Cross Sections. The preliminary draft for the cross sections should include the following:

   a. profile grade elevations;
   b. templates of the typical sections placed on the existing cross sections;
   c. drainage structures;
   d. approaches and drives; and
   e. buildings.

10. Design Information. Include the preliminary draft of the Design Summary and the draft Fish and Wildlife Review, if applicable. The preliminary storm sewer analysis should also be included with this submittal. Unique special provisions should be initiated with this submittal.

14-2.01(04) Design Hearing Plans and Preliminary Right-of-Way Plans Submission

Plans for this submittal should be close to their final form. The construction plan sheets for this submittal should be legible and consistent with the quality desired for public viewing. If one or more ramps are to be closed for 7 days or longer, a public information meeting will be required. The procedure for such meeting should be in accordance with Section 14-02(02). The right-of-way plans should be consistent with the requirements in Chapter Eighty-five. The designer should review the *INDOT Typical Plan Sheets* document to determine what information should be included on each sheet. Review the following sheets and information for Quality Assurance and include them with this submission.

1. Previous Reviews. Include the marked-up plans from the previous submittal with this submission.

h. ditches;

i. shoulder corrugations if warranted; and

j. clear zones on a 4R project.

5. Plat Sheet. If right-of-way acquisition is required, include a preliminary Plat No.1. See Section 85-2.0. A plat sheet is not required for a local agency project.

6. Plan and Profile Sheets. At this project stage, the plan and profile design information will generally be essentially completed. Some of the details that should be addressed include the following:

a. complete the plotting of the existing topography;

b. project and construction limits;

c. proposed or existing right-of-way limits;

d. horizontal alignment (e.g., horizontal curve data, superelevation, PC, PI, PT, bearings);

e. vertical alignment and its relationship to grade controlling features;

f. any alignment controlling features (e.g., high-water levels, existing cross roads and bridges, regulated drains, drainage structures, railroads, underdrain criteria, maintenance of traffic considerations);

g. drainage features (e.g., storm sewers, pipe structures, structure end treatment, ditch grades) and proposed drainage notes;

h. approximate roadside barrier locations;

i. permanent erosion protection, including whether paved side ditches, riprap or sodding will be required;

j. temporary erosion control details; and

k. permanent median crossovers. For approved locations, see Chapter Fifty-four.

7. Interchanges. If applicable, the general layout of each interchange should include ramp gradients, horizontal alignment, vertical alignment, etc.

8. Detail Sheets. The preliminary layouts or sketches to be included are as follows:

   a. major interchanges and/or ramp intersections, including turning movements, turn lanes and pavement markings;

   b. signals;

   c. signs, including sign structures;

   d. lighting;

   e. pavement markings;

   f. retaining walls;

   g. special drainage structures;

   h. spot elevations;

   i. superelevation transitions diagrams;

   j. weight stations; and

   k. rest areas.

   If shoulder corrugations are warranted, and the plans include details for non-standard public road approaches, driveways, etc., each detail should show the extent of corrugations installation required in conjunction with the construction illustrated by the detail. If applicable, the INDOT *Standard Drawings* should be used as a guide when determining the limits of corrugations installation related to the feature shown in the detail.

9. Traffic Maintenance Details. The proposed traffic maintenance scheme and phasing should be outlined including traffic crossovers, ramp closures, number of through lanes maintained in each direction, etc.

10. Approach Table. The preliminary information to be included in the approach table if a crossroad is present is as follows:

   a. location (station);
   b. type of approach;

14-2.03(02) Grade Review and Structure Type and Size Selection Submission

Place the proposed design information for this submittal in Microstation. However, the plans need not be in final form. The designer is encouraged to add notes on the plans explaining special situations or items which are not readily apparent which may influence the proposed design. These notes should be removed for later submissions. The following sheets and information must be reviewed for Quality Assurance and included with this submission.

1. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and note approval dates of any design exceptions. Also note any discrepancies from the Level Two design criteria listed in Section 40-8.02(02).

2. Computations. Include the computations as follows:

    a. design computations for determining the structure size and geometrics; and

    b. project length computations including guardrail lengths and other contributing factors.

3. Economic Analysis. Include a copy of any structural economic analysis that may have been conducted to determine the most economic structural alternative.

4. Index and Title Sheet. At this project stage, the Index and Title Sheet should include the information as follows:

    a. project numbers;

    b. description (des) number;

    c. bridge file number;

    d. county location map;

    e. project location map including north arrow and scales;

    f. description of the project work type and location;

    g. design data including design speed, project design criteria, functional classification, terrain and traffic data;

h. applicable reference point (does not apply to local agency project);

i. signature block(s); note that these blocks will not be completed at this stage; and

j. an index of plan sheets at this stage. Note that sheet numbers will change for future submittals.

5. Typical Cross Sections. Typical cross sections for this submittal should only show basic configuration and design features. This will typically include the following:

a. lane and shoulder widths;

b. profile grade, construction centerline, paper relocation line, and survey line locations; and

c. basic design features including curbs, sidewalks, pavement and shoulder cross slopes, side slopes, ditches, shoulder corrugations if warranted, etc.

6. Road Plan and Profile Sheets. At this project stage, the Road Plan and Profile sheets will generally only include the preliminary design information. Some of the details that should be addressed include the following:

a. plotting of existing topography should be complete;

b. beginning and end of project;

c. horizontal alignment (e.g., horizontal curve data, PC, PI, PT, bearings);

d. vertical alignment and its relationship to grade controlling features;

e. preliminary drainage design including mainline culverts;

f. preliminary public road approach and drive locations;

g. approximate construction limits; and

h. proposed guardrail limits.

7. Layout Sheet. The Layout sheet should include the preliminary design information for the following:

a. existing ground contours;

b. horizontal alignment;

c. vertical alignment;

d. drainage structures;

e. public road approach and drive locations;

f. approximate construction limits;

g. plan view showing bridge centerline station and skew;

h. proposed structure geometrics (span lengths and clear roadway widths in the Title Block);

i. channel protection;

j. utility owners;

k. existing structure data; and

l. hydraulic data.

8. Channel Change Layout Sheet. Include this sheet when the extent of the channel change goes beyond the general layout. The Channel Change Layout sheet should include the preliminary design information for the following:

a. stream profile;
b. new channel geometrics;
c. channel typical cross section; and
d. slope protection.

9. Cross Sections. The preliminary cross sections should include the following:

a. templates of the typical sections placed on the existing cross sections;
b. profile grade elevations; and
c. drainage structures.

10. Certification. Provide an up-to-date copy of the Scope/Environmental Compliance Certification/Permit Application Certification Form with this submission.

14-2.03(03) Preliminary Field Check Plans

Plans should be approximately 40% complete at this stage. The following sheets and information must be reviewed for Quality Assurance and included with this submission.

1. Previous Reviews. Include the marked-up plans from the previous submittal with this submission.

2. Conformance. Review the plans, including the temporary runaround and other traffic maintenance plans excluding detours for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and note any apparent or possible design exceptions. Also note any discrepancies from the Level Two design criteria listed in Section 40-8.02(02). Submit the required documentation for all Level One and Level Two design exceptions.

3. Plat Sheet. Include a preliminary Plat No. 1 (does not apply to local agency project).

4. Road Plan and Profile Sheets. In addition to the information in Section 14-2.03(02), show the following:

    a. elevations and grades of ditches so that accurate right-of-way requirements can be determined;

    b. construction limits;

    c. proposed right-of-way including temporary right-of-way;

    d. public road approach and drive locations;

    e. drainage features (e.g., storm sewers, pipe structures, ditch grades); and

    f. permanent erosion protection, including paved side ditches, riprap or sodding limits.

5. Detail Sheets. Include the preliminary layouts for the details as follows:

    a. roadway and shoulder layout for guardrail;

    b. special elements, where applicable (e.g., modified approaches, signs, signals);

c. intersection layout details including right- and left-turn lanes with the turning movements indicated; and

d. superelevation transition diagrams.

If shoulder corrugations are warranted, and the plans include details for non-standard public road approaches, driveways, etc., each detail should show the extent of corrugations installation required in conjunction with the construction illustrated by the detail. If applicable, the INDOT *Standard Drawings* should be used as a guide when determining the limits of corrugations installation related to the feature shown in the detail.

6. Traffic Maintenance Details. The proposed traffic maintenance scheme and phasing should be outlined.

7. General Plan Sheet. The General Plan sheet should include the information as follows:

a. plan view;
b. elevation view;
c. typical bridge cross section;
d. design data. A note should be included which reads as follows: "Designed for HS 25 loading, in accordance with the 2002 AASHTO *Standard Specifications for Highway Bridges* and its subsequent interims;" and
e. suggested substructure type.

8. Road Summary Sheet. The preliminary Road Summary sheet should include the following:

a. approach table with type, location and geometric data included and type of materials noted; and

b. structure data table with location, size and type noted.

9. Cross Sections. See information for cross sections in Section 14-2.03(02). Finalize the cross sections according to the revisions from the Grade Review plans. Also show the public road approaches and drives.

10. Design Information. In addition to the plans, the designer should include the preliminary draft of the Design Summary, the draft Fish and Wildlife Review and a request for preliminary woody revegetation determination, if applicable.

14-2.03(04) Design Hearing Plans and Preliminary Right-of-Way Plans Submission

Plans for this submittal should be close to their final form. The construction plan sheets for this submittal should be legible and consistent with the quality desired for public viewing. The right-of-way plans should be consistent with the requirements of Chapter Eighty-five. The designer should review the *INDOT Typical Plan Sheets* document to determine what information should be included on each sheet. The following sheets and information must be reviewed for Quality Assurance and included with this submission.

1. Previous Reviews. Include the marked-up plans from the previous submittal with this submission.

2. Index and Title Sheet. Finalize the Title Sheet for right-of-way plans and include the right-of-way index.

3. Plat Sheets. Finalize all plat sheets, if required.

4. Road Plan and Profile Sheets. Finalize the right-of-way.

5. Layout Sheet. The Layout sheet should be essentially complete.

6. General Plan Sheet. The General Plan sheet should be essentially complete.

7. Design Information. In addition to the construction plans, this submittal should include an updated cost estimate for the project and a copy of the draft Design Summary. The Department's cost estimating procedures should be used for the preliminary construction cost estimate; see Chapter Twenty. Quantities will generally consist only of major pay items with a percentage added to cover minor items. If practical, the traffic-related items should be segregated.

8. Certification. Provide an up-to-date copy of the Scope/Environmental Compliance Certification/Permit Application Certification form with this submission.

14-2.03(05) Right-of-Way Plans Submission

Chapter Eighty-five presents the criteria and information that should be included with a set of right-of-way plans. This submission is not required for a local agency project. In addition to completing the following, the designer should review these instructions for Quality Assurance.

1. Include the marked-up preliminary right-of-way plans with this submission, if required to do so.

2. Incorporate all revisions made during the Preliminary Right-of-Way Plans Submission review.

3. Complete all sheet cross references.

4. Complete all project information boxes in the right-of-way plans, including right-of-way project number and sheet numbers.

5. Complete the checklist shown in Figure 85-2F.

14-2.03(06) Preliminary Plans for Final Approval Submission

Submit a request for the final pavement design to the Materials and Tests Division at this time. Include the and review these elements for Quality Assurance as follows

1. plan revisions resulting from the Design Hearing comments;

2. any revisions to the plans due to the Geotechnical Report recommendations;

3. Soil Borings sheets (prepared by the Materials and Tests Division for an in-house project or by the consultant for a consultant-designed project);

4. Foundation Review form;

5. a final Design Summary including resolution of hearing comments;

6. environmental requirements satisfied by either of the following:

    a. The Environmental Impact Statement is complete and the Record of Decision (ROD) has been issued;

    b. The Environmental Assessment is complete and a Finding Of No Significant Impact (FONSI) is made by the Federal Highway Administration; or

    c. The Categorical Exclusion is complete. If there is a line on which the Federal Highway Administration is to sign, it must be signed;

7. permit information as required; and

8. updated Scope/Environmental Compliance Certification/Permit Application Certification form.

14-2.03(07) Final Check Prints Submission

For this submittal, finalize the plans and include all roadway, traffic and bridge details and check the computations. Complete the following and review these elements for Quality Assurance.

1. Previous Reviews. Include the marked-up plans from the previous submittal with this submission.

2. Conformance. Review the plans for conformance with the Level One controlling design criteria listed in Section 40-8.02(01) and note approval dates of any design exceptions.

3. Pavement Design. Incorporate the final pavement design into the typical cross section and final quantities.

4. Computations and Quantities. Include the computations and quantities with this submission as follows:

    a. final approach drainage design;
    b. superstructure design;
    c. end bent or abutment design;
    d. interior substructure design;
    e. bridge seat elevations;
    f. screeds (at copings, profile grade, each beam line and each construction joint);
    g. superstructure quantities;
    h. end bent or abutment quantities;
    i. interior substructure quantities;
    j. pavement, curb, sidewalk and related quantities;
    k. drainage structure quantities;
    l. riprap, sodding and seeding quantities;
    m. earthwork quantities;
    n. traffic-related items and designs as discussed and revised from Field Check Plans;
    o. traffic maintenance quantities;
    p. miscellaneous roadway quantities;
    q. updated construction cost estimate; and
    r. completed special provisions.

5. Reports. Ensure that the recommendations from the Geotechnical Report and other reports regarding peat, hazardous waste, special wastes, etc. have been incorporated into the plans, specifications, and cost estimate.

6. Plans. The plans should be nearly complete at this project stage and should include the following.

   a. Title Sheet. Complete the Design Data Block and update the index as necessary.

   b. Typical Cross Sections. Add the final pavement design information to the Typical Cross Sections.

   c. Plan and Profile Sheets. Ensure that structure notations are completed; sodding, riprap and paved sodded ditch locations are indicated; earthwork balances are shown; and removal items noted.

   d. Detail Sheets. Ensure all details are completed and included with this submission. This includes details for the following:

      (1) reinforced concrete bridge approach bill of materials and/or details;
      (2) temporary erosion control;
      (3) traffic maintenance details; and
      (4) traffic designs elements (e.g., intersections, signals, signing and lighting).

   e. Bridge Sheets. Finalize the design for the bridge sheets as follows.

      (1) Soil Borings Sheet. Ensure the information is accurate from the Geotechnical Report. Each boring log should include an elevation at each break in the soil strata. The elevations should be shown along the vertical grid so that the elevation of each soil sample can be ascertained. Logs for roadway borings should not be included on this sheet.

      (2) Layout Sheet. Ensure that the riprap and slope wall quantities are noted and the earthwork summary is completed.

      (3) General Plan Sheet.

      (4) End Bent and/or Abutment Details.

      (5) Interior Substructure Details.

      (6) Superstructure Details.

f. Tables. Complete all data tables including the following:

(1) bridge summary table;
(2) structure data table;
(3) approach table;
(4) underdrain table;
(5) paved side ditch and sodding table;
(6) guardrail table; and
(7) sign summary table.

g. Cross Sections. Design information on cross sections should be essentially complete. This includes final structure notations, earthwork areas and volumes, and benching areas and volumes.

7. Certification Forms. Include a copy of the Scope/Environmental Compliance Certification/Permit Application Certification form.

8. Rule 5 Submission. If required and not previously submitted, submit in accordance with Section 9-1.02.

9. Bridge Load Rating. The Design Division's project coordinator will submit a copy of the bridge plans, excluding cross sections, with a cover letter indicating the designer's name, design firm (if applicable), telephone number and/or e-mail address, and any other necessary information to the Program Development Division's bridge inspection engineer. The bridge inspection engineer will run the available bridge load rating program and provide the project coordinator with the bridge load rating analysis and output results, not later than four weeks from the date of plans submittal.

If the analysis shows an inventory rating less than that required by Section 60-3.02, the project coordinator will send the information to the designer to revise the design and plans or resolve any input errors.

14-2.07(05) Final Tracings Submission

The final plan submittal will include any necessary revisions from the Final Check Print submittal. Section 14-1.02(03) discusses what is required for the Final Tracings Submission.

14-2.08 Partial 3R Project Plan Development

14-2.08(01) Preliminary Plans

1. Title Sheet. The title sheet is the first page and should contain the information as follows:

    a. contract and description code numbers;
    b. traffic data;
    c. design data as follows:

        (1) design speed;
        (2) project design criteria: Partial 3R (non-freeway);
        (3) functional classification;
        (4) rural or urban setting;
        (5) terrain; and
        (6) access control;

    d. project description information as follows:

        (1) route number;
        (2) county names and congressional township, range, and section;
        (3) limits described from Department-maintained route intersections and by Reference Post system; and
        (4) length (gross and net);

    e. location map, including information as follows:

        (1) civil boundaries;
        (2) county, township lines, corporate limits;
        (3) nearby Department-maintained routes and major local roads;
        (4) north arrow; and
        (5) project limits, with stations and highlighted graphics;

f. paving exceptions, with stations;
g. station equations;
h. current standards specifications effective year;
i. certification block; and
j. state location map.

2. Construction Plans Index. The Construction Plans Index is a tabulation and description of the numbered design drawings to be included in the plans document.

3. Strip Map. The strip map is usually a line drawing showing the following:

a. route number;
b. beginning and ending stations and reference posts and station equations. Consistent units should be used throughout the plans;
c. stations and reference posts for intersecting streets, county roads, city or town limits, and intersecting county lines and railroad crossings, bridges, and paving exceptions;
d. North arrow;
e. location of all recommended construction signs;
f. existing utility lines within construction limits; and
g. civil townships.

4. Typical Cross Sections. The typical cross sections are composed of the basic parts as follows.

a. Illustration.

(1) existing conditions and dimensions (i.e., pavement width, material type, thickness cross-slope, curb, shoulder, ditches, etc.); and

(2) proposed construction and dimensions (i.e., HMA courses with binder grading, overlay cross-slope, widening, curb shoulders, ditches, shoulder corrugations if warranted, etc.).

b. Legend showing labels and corresponding items. The descriptions shown in the pay item names should be used when applicable.

c. Title block.

14-2.08(14) Contract Documents Package

Upon receipt of the approved final plans by the development engineer, they are ready to be transmitted as contract documents to the Contracts and Construction Division's Contracts Section for processing. The package should consist of the following.

1. Plans.

    a. 279 mm x 216 mm Plan Sheets Format. The original construction plans and cross sections with one photocopied set should be transmitted. If the cross sections are in the 915 mm x 610 mm format, only the originals of the cross sections should be sent.

    b. 915 mm x 610 mm Plan Sheets Format. The original construction plans and cross-sections and two sets of prints of the construction plans without cross-sections prints should be transmitted.

2. Estimate of Quantities and Cost Estimate. The estimate of quantities and cost estimate should be generated using the authorized estimating software. The transmittal shall consist of a floppy diskette and one hard copy of both the estimate of quantities and cost estimate.

3. Special Provisions. One hardcopy of the prepared Special Provisions Menu with completed recurring special provisions and unique special provisions should be transmitted. A floppy diskette containing the unique special provisions shall be provided.

4. Detour Maps. The Official Detour Map and unofficial local detour map, if required, with the approved unofficial local detour documents should be transmitted.

The approved package should be sent to the Contracts and Construction Division's Contracts Section where the documents will be processed and prepared for letting. This step should be completed at least 14 weeks prior to the contract letting date.

14-2.08(15) Review Process

1. Pre-Letting. The Contracts and Construction Division may require additional information or further corrections to be made in order for the contract documents to be properly processed. The designer should promptly address these concerns. All responses from the designer should be directed to the district construction engineer.

2. Post-Letting. Following the contract award, a preconstruction conference will be held. The designer should be available upon request to answer any questions.

14-2.09 Bridge Plans Complementary to Road Work

Plans for each bridge which are complementary to plans for road work must be developed as described below. Each structure which is assigned a structure file number must also be assigned a Des number.

14-2.09(01) INDOT Route Project

1. New or Replacement Beam or Slab Bridge. A separate set of plans should be developed for each bridge. However, plans for an overflow structure may be included in the set for the main-channel structure.

2. New or Replacement Three-Sided, Box, or Pipe Structure. These may be incorporated into the road plans. The structure file numbers and Des numbers for all such structures included in the road plans should be shown on the title sheet.

   A separate set of plans with just one title sheet may be developed for one or more of these structures.

3. Bridge Rehabilitation. Multiple bridge rehabilitations may be combined into one set of bridge plans. The structure file numbers and Des numbers for all such structures should be shown on the title sheet.

14-2.09(02) Local Public Agency Project

Plans may be developed in any manner the local public agency desires. However, the structure file numbers and Des numbers for all structures should be shown on the title sheet.

d. Profile View (Vertical). The vertical profile scale will be 1:50 or 1:100 depending on the complexity of the project and the plan view scale selected. Typically, a 1:100 scale will be used with a plan view scale of 1:1000, and a 1:50 scale will be used with plan view scales of 1:500 and 1:200.

Other scales, as necessary, may be used to provide better clarity or more practical layouts. If a detail can not be adequately viewed in the selected scale, show the element on a Detail Sheet.

5. Superelevation Transition Sheets. The selected scale for superelevation sheets will generally be left to the designer's discretion. Select a scale which will adequately show the necessary features.

6. Detail Sheets. The selected scale will vary based on the complexity of the detail and room available on the sheet. The following provide the typical scales that are commonly used on detail sheets.

a. Construction Details. Use a plan view scale of 1:200.

b. Intersection or approach drawings. Use a plan view scale of 1:200.

c. Spot Elevation Sheets. Use a plan view scale of 1:200.

d. Signing Sheets. The plan view scale for sign location sheets will be 1:500 for an urban area or 1:1000 for a rural area.

e. Signal Sheets. The plan view scale will usually be 1:200.

f. Pavement Markings. The preferred plan view scale is 1:500. Where significant detail is required, use a plan view scale of 1:200.

g. Traffic Maintenance Details. Use a plan view scale of 1:500 or 1:1000.

The designer may select an alternative scale for any of the above details based on the complexity of the detail and room available on the sheet. For those details not listed, the designer will determine the scale on a detail-by-detail basis.

7. Cross Sections. The horizontal and vertical cross section scales will typically be 1:100. A larger scale may be used where a greater cross section width or height is required.

14-3.05(02) Bridge Project

Many of the sheets for a bridge project (e.g., Index and Title Sheet, Typical Cross Sections, R/W Plat Sheets, Plan and Profile Sheets, Cross Sections) will use the same scales as listed in Section 14-3.05(01) for a road project. The scales for the structural details will vary according to the complexity of the drawing and room available on the sheet. The designer should select a scale which will adequately show the necessary detail and still allow the detail to be readable at a reduced scale. Typically, the scale for the Layout Sheet should be 1:300, 1:400, or 1:500. For a complex urban project or a project in a steep rural area, a 1:200 scale may be used.

14-3.05(03) Traffic Project

For a traffic-signs, signalization, or lighting project, the following scales should be used to develop the construction plans.

1. Title Sheet. For the location map, a 1:25 000 scale is most often used. The location map for an urban area may use a larger scale for better clarity. For a longer project or for a project scattered throughout a district, it may be necessary to use a scale of 1:50 000 or smaller.

2. Plan Sheets. The selected scale will depend upon the type of project selected:

   a. Traffic-Signs Sheets. The plan view scale for sign location sheets will typically be 1:500 for an urban area. For a rural area, depending on the project complexity, the scale will be 1:1000 or 1:2000.

   b. Signalization Sheets. The plan view scale for signals at an intersection will usually be 1:200. Where details are required for work between intersections (e.g., interconnect details), the scale may be 1:1000 or 1:500.

   c. Lighting Sheets. The plan view scale for lighting location sheets will typically be 1:500 in an urban area. For a rural area, depending on the project complexity, the scale will be 1:1000 or 1:2000.